

REMARKS

Claims 1-19 are currently pending in this application; claims 1-9 and 17-19 are currently under consideration as a result of Applicants' Response to the Restriction Requirement dated October 23, 2003. Applicants appreciate the Examiner's indication of claims 9 and 18 as allowable over the cited references if rewritten in independent form and agree with the Statement of Reasons for the Indication of Allowable Subject Matter at § 7 of the Office Action. However, Applicants decline the Examiner's invitation to accept only claims 9 and 18 and instead present the following arguments as to the patentability of all the pending claims.

Restriction Requirement

The Examiner has maintained and made final the restriction requirement of September 23, 2003, with one clarification. Group I, the group elected by Applicants in the Response dated October 23, 2003, contains claims 1-9 and 17-19; thus, these claims are currently under consideration. Group II contains non-elected claims 10-16 and Applicants retain the right to present these claims in a divisional application.

Objection to the Specification

The Examiner objects to the specification because the Abstract uses the phrases "is disclosed," "the present invention relates to," and "according to the present invention." With this paper Applicants have deleted the Abstract and replaced it with a new version that deletes the objectionable phrases. Applicants submit that this

amendment does not add any new matter to this application and, in view of the change, respectfully request that the Examiner remove the objection.

Rejection under 35 U.S.C. § 102(b)

The Examiner has rejected claims 17 and 19 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent No. 3,555,232 to Bleackley. The Examiner believes that Bleackley teaches microwave guides comprising broad walls that are separated by and electromagnetically coupled with at least one narrow wall having a non-linear profile. Applicants respectfully traverse this rejection.

Bleackley discloses a "waveguide with a cross section having an internal ridge structure" that "can be formed with a taper in the longitudinal direction of the waveguide" (col. 1, lines 47-51) and causes intensification of the electric field between ridge pairs (abstract). Figure 16, cited by the Examiner in the Office Action at § 3, shows "ridges 65 and 66 □ caused to converge towards one another from a widely spaced orientation at 69 . . . to a closely spaced orientation at 70" (col. 10, lines 67-71). These ridges, added to the interior of the waveguide and separate from the waveguide itself, allow for the gradual intensifying of the field between the ridges (col. 10, lines 71-74). As shown in Figures 2 and 9, the ridges disclosed by Bleackley are meant to be separate from the walls of the waveguide (col. 3, lines 61-67) and, by their configuration, do not cause any separation or electromagnetic coupling of the waveguide walls.

Quite differently, the present invention does not add ridges to the interior of the waveguide, but instead changes the location of the web relative to the center of the waveguide in order to equilibrate the heating and/or drying (see paragraphs [039] and

[0113], and Figure 19). These changes in web location may be effected through the use of a microwave waveguide comprising curvilinear narrow walls. For example, the top 40 and the bottom 50 of the waveguide shown in Figure 19 have been modified to be curvilinear. The top and bottom of Figure 19 thus display an embodiment of the "at least one narrow wall wherein said narrow wall has a nonlinear profile" as presently claimed. The broad walls containing the slot are then "separated by and electromagnetically coupled with" the narrow walls. See paragraph [040]. The side views of Figures 20 and 21 further depict various embodiments of present invention in which the narrow walls have a clearly nonlinear profile; the end views of Figures 20 and 21 show those same embodiments and reveal that the broad walls are separated by and electromagnetically coupled with the curvilinear narrow walls.

As a result, any analogy is inappropriate between the narrow walls of the presently claimed microwave waveguide and the interior ridges disclosed by Bleackley. Figure 16 of Bleackley clearly shows the walls of the waveguide 64 as linear, regardless of any configuration of the disclosed ridges. In addition, the disclosed ridges clearly do not cause the separation of the broad walls of the Bleackley waveguide, due to the gap between them, and also could not be said to electromagnetically couple any of the waveguide walls. Under 35 U.S.C. § 102(b), a reference must disclose each and every element of a claim in order to anticipate that claim. See MPEP § 2131. Because Bleackley does not teach a microwave waveguide comprising broad walls separated by and electromagnetically coupled to at least one narrow wall having a nonlinear profile, Applicants submit that claims 17 and 19 are not anticipated by the reference and respectfully request that this rejection be withdrawn.

Rejection under 35 U.S.C. § 103(a)

The Examiner has rejected claims 1-8, 17, and 19 under 35 U.S.C. § 103(a) as obvious over Bleackley in view of U.S. Patent No. 6,242,726 to Harris et al. The Examiner believes that Harris et al. teaches a field modifier with a non-linear profile and, further, that one of ordinary skill in the art would combine Harris et al. with Bleackley in an effort to improve the uniformity of heating in a waveguide. Applicants respectfully traverse this rejection.

The Examiner relies on Figure 9 from Bleackley to show a microwave waveguide comprising broad walls labeled "B" by the Examiner, asserting that the ridges of Figure 9 labeled as 14-17 act as field modifiers that separate and electromagnetically couple the broad walls. The Examiner admits that Bleackley does not disclose the modifier having a nonlinear profile. See Office Action at § 5. Instead, Harris et al. purports to show a modifier with a nonlinear profile by its disclosure of a tuning section 60 and tuning probes 62 as shown in its Figure 5.

The combination of these references does not meet the *prima facie* test to show obviousness of claims 1-8, 17, and 19. In order to prove a *prima facie* case of obviousness, the Examiner must show the existence of three criteria: (1) the references themselves, or knowledge commonly available, would suggest or motivate one of ordinary skill in the art to combine the references; (2) a reasonable expectation of success in combining the references; and (3) that the references, either separately or combined, teach or disclose each of the recited elements in the pending claims. See MPEP § 2143. Applicants submit that the Examiner has not shown at least the third of these requirements.

As discussed in the previous section, the disclosed ridges of Bleackley neither separate nor electromagnetically couple the broad walls of a microwave waveguide, nor do they have a nonlinear profile. The tuning section and probes disclosed by Harris et al. do not remedy these deficiencies. That reference states that the tuners "are used to generate an induced reflection which cancels the reflected [microwave] energy" (col. 3, lines 45-46). Further, a computer tuning system "calculate[s] adjustments required to reduce the amount of reflected microwaves passing back toward the microwave source to approximately zero" (col. 4, lines 1-4). As shown by Figure 5, any one of the tuning probes themselves do not have a non-linear profile. In addition, Figure 5 shows that by their independent configuration the tuning probes do not separate the broad walls of the waveguide 40. Also, because the tuning probes only extend zero to three inches into the tuning section (col. 7, line 77), Applicants assert that they would not electromagnetically couple the broad walls of the waveguide.

In fact, Harris et al. teaches away from the tuning probes electromagnetically coupling the walls of the waveguide. As shown in Figure 7, the microwaves must travel through the tuning section 60 into a mode converter section 92, through a circular section field formation tube 52 and finally into the heating chamber 34 where they contact the billet 12 (see col. 8, lines 12-40). If the tuning probes electromagnetically coupled the walls of the waveguide, the microwaves or a majority of the microwaves may never travel beyond the waveguide and, thus, would not reach their intended purpose of contacting the billet.

Applicants submit that the tuning section and tuning probes of Harris et al. do not remedy any of the deficiencies of Bleackley. Because neither reference, either

separately or in combination, teaches or suggests each of the claim limitations recited in claims 1-8, 17, and 19, Applicants respectfully request that this rejection with withdrawn.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the reconsideration and the continued examination of this application and the timely allowance of the pending claims. In the event that this response does not result in the allowance of claims 1-10 and 17-19, Applicants invite the Examiner to contact either the undersigned at 404-653-6460 or Robert Stanley at 404-653-6441 to discuss the further prosecution of this application.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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Attachments: Replacement Abstract (1 Sheet)